

INTERNATIONAL SEARCH REPORT

PCT/GB 03/04094

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 F01D5/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 852 285 A (GEN ELECTRIC) 8 July 1998 (1998-07-08)	1,51
Y	column 3, line 45 -column 4, line 30	52
A	column 5, line 9 - line 37 column 6, line 4 -column 14 abstract; claim 10; figures	2-50
X	US 4 416 585 A (ABDEL-MESSEH WILLIAM) 22 November 1983 (1983-11-22)	1,51
A	column 1, line 61 -column 2, line 10 column 2, line 63 -column 4, line 14 abstract; figures	2-50,52
	-/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

6 February 2004

Date of mailing of the international search report

13/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

O'Shea, G

INTERNATIONAL SEARCH REPORT

PCT/GB 03/04094

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 395 212 A (ANZAI SHUNICHI ET AL) 7 March 1995 (1995-03-07)	52
A	column 1, line 17 - line 24 column 3, line 56 -column 4, line 12 column 5, line 3 - line 13 column 7, line 12 - line 37 abstract; figures 1-4,9-15	1-51
A	US 5 919 031 A (JOHNSON BRUCE ET AL) 6 July 1999 (1999-07-06) column 2, line 34 - line 61 column 3, line 2 - line 17 column 4, line 6 - line 13 abstract; figures	1,51,52
X	EP 0 939 196 A (TOKYO SHIBAURA ELECTRIC CO) 1 September 1999 (1999-09-01) column 14, line 16 - line 39 column 15, line 27 - line 42 column 27, line 30 -column 28, line 36 abstract; figures 1-3,7,23-30	53-57
A	US 5 468 125 A (HENRY CHESTER L ET AL) 21 November 1995 (1995-11-21) column 2, line 46 - line 61 column 3, line 34 -column 4, line 10 abstract; figures	53-57

INTERNATIONAL SEARCH REPORT

PCT/GB 03/04094

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-50,51,52

A turbine blade with an internal cooling channel, said channel comprising a plurality of turbulence promoting ribs, each rib comprising two rib portions joined together to form a chevron junction, said chevron junction having an angle of between 80 and 120 degrees and wherein each rib defines at least one gap therein.

2. Claims: 53-55,56-57

A turbine blade with an internal cooling channel, said channel comprising a plurality of turbulence promoting ribs, at least one rib has a trapezoidal or parallelogram cross-sectional shape and extends from the channel wall surface at an angle greater than 60 and less than 90 degrees.

INTERNATIONAL SEARCH REPORT

PCT/GB 03/04094

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
✓ EP 0852285	A	08-07-1998	US 5797726 A DE 69714960 D1 DE 69714960 T2 EP 0852285 A1 JP 10274002 A	25-08-1998 02-10-2002 08-05-2003 08-07-1998 13-10-1998
✓ US 4416585	A	22-11-1983	BR 8002989 A CA 1138345 A1	28-07-1981 28-12-1982
✓ US 5395212	A	07-03-1995	JP 3006174 B2 JP 5010101 A DE 69216501 D1 DE 69216501 T2 EP 0527554 A1	07-02-2000 19-01-1993 20-02-1997 31-07-1997 17-02-1993
✓ US 5919031	A	06-07-1999	DE 19634238 A1 CN 1186150 A ,B DE 59709255 D1 EP 0825332 A1 JP 10089006 A	26-02-1998 01-07-1998 13-03-2003 25-02-1998 07-04-1998
✓ EP 0939196	A	01-09-1999	JP 11241602 A EP 0939196 A2 US 6227804 B1	07-09-1999 01-09-1999 08-05-2001
US 5468125	A	21-11-1995	NONE	